South Sierra IRWMP Application
Work Plan
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3. Map of the SSIRWM Region, MOUs with adjacent regions and an Informational Memo on Watersheds in the Region
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South Sierra IRWMP Application

Work Plan

A. Background

1. The Regional Water Management Group (RWMG)

a. How and when developed

The Southern Sierra Integrated Regional Water Management Planning effort (SSIRWMP) was initiated through the actions of the Sequoia Riverlands Trust (SRT), Sierra Nevada Alliance (SNA) and the Sierra Nevada Conservancy (SNC). The Sierra Nevada Conservancy provided a grant to fund a launch phase of the planning process to identify stakeholders, hold public meetings and write a grant to the California Department of Water Resources. Sequoia Riverlands Trust accepted the role of fiscal agent. The Sierra Nevada Alliance worked with SRT to create a stakeholder list and organize the initial meetings. The first stakeholder meeting was held on May 21st, 2008. This meeting involved public agencies, non-profits and interested stakeholders, many of which became members of the Regional Water Management Group.

Following this initial meeting, the IRWM participants began aggressive public outreach and held monthly meetings. Outreach was conducted to numerous interest groups, federal, state and local agencies as well as non-governmental organizations. The objective of the IRWMP early on was to establish a broad and diverse planning group that could make necessary organizational decisions such as:

- identify and approve IRWMP boundaries,
- construct and approve a governance structure and function,
- identify and acquire funding mechanisms,
- develop a public participation process, and
- Identify priorities for the IRWM Planning Process

Over the next six months, this group drafted and adopted a Memorandum of Understanding and a governance structure with governance principals (see Attachment 3). The governance structure has since been modified to reflect the desire for an even broader stakeholder involvement, as well as the changes in DWR regulations regarding IRWM governance (see below, Section b.)

Since its initial session, this group has met once per month at locations in Tulare and Fresno County. All stakeholders are encouraged to participate and all the meetings are open to the public. Meeting notes and other documents are published on the Sequoia Riverlands Trust's website (http://www.sequoiariverlands.org/learn-irwmp.html.).

a. Roles and responsibilities

The South Sierra IRWMP effort (SSIRWMP) designed its initial governance structure a little differently than the standard DWR model. The SSIRWMP governance structure has a Planning Committee that is the decision-making body during the SSIRWMP formation process. This Planning Committee oversees and approves major programmatic decisions such as funding applications and

performance measures. Any qualifying entity which signs the MOU (see Attachment 2) is a member of the Planning Committee.

Originally the SSIRWMP governance structure included a separate Regional Water Management Group (RWMG). This entity was only to fulfill DWR requirements, and functioned as the official pass-through of the Planning Committee decisions. It had no independent decision-making authority and followed the directives of the Planning Committee. Since the DWR requirements for RWMGs have been modified, the Planning Committee and the RWMG have been merged into one body (PC/RWMG).

The current SSIRWMP Planning Committee consists of 18 members representing major stakeholders in the region. There is another group of 15-20 stakeholders which have not signed the MOU but which regularly participate Planning Committee/RWMG meetings.

A list of Planning Committee members and other stakeholder participants is attached as Attachment 4 along with a list of stakeholders who receive notices and information about the SSIRWMP activities but do not currently attend meetings.

b. Memorandum of Understanding –

An MOU was developed over the period of July 2008 to March 2009 and was approved April, 2009. All entities signing the MOU become members of the Planning Committee/RWMG. The MOU is attached (See Attachment 2.)

2. Preliminary Planning Work

The Planning Committee/RWMG has not formally begun the process of preparing the IRWMP for the region. However in preparation for this process it has engaged in foundational pre-planning exercises to help shape and guide the planning effort.

a. Mission, Vision and Values:

The Planning Committee and other stakeholders have created an initial statement of Mission, Vision and Values:

SSIRWMP Mission

The mission of the Southern Sierra Regional Water Management Group is to provide a forum to discuss, plan and implement creative, collaborative, regional, integrated water/natural resource/watershed management actions that enhance the natural resources and human communities of the Southern Sierra Region.

Regional Vision

The vision of the Southern Sierra Regional Water Management Group is that the southern Sierra will have healthy, sustainable watersheds, with vibrant economies, adequate water supplies, and sufficient capacity to

- engage in collaborative processes,

- obtain resources to address water and natural resource issues,
- construct and implement plans and projects, and
- resolve regional and local conflicts and issues in a consensus-based, voluntary and non-regulatory manner.

SSIRWMP Values

In order to realize its mission and regional vision in a transparent and inclusive manner, the SSIRWMP values the following as means to those ends:

- Stakeholder and public input to natural resource decision-making;
- Consensus-based decision making;
- Inclusiveness and transparency
- Science as a basis for decision-making and natural resource management;
- Respect for private property rights
- Respect for the public trust
- Equity and fairness in resolution of water conflicts and in developing mutually beneficial approaches and results
- Integration of management entities, strategies and benefits
- Coordination with adjacent regions
- Sharing of data, information and knowledge in a variety of ways to meet the needs of the stakeholders and the public at large

b. Objectives for the Planning Process

The Planning Committee has also approved objectives for the planning process. Note that these objectives are different than the IRWMP Objectives which will be developed during the IRWM Planning process. Those Plan objectives will relate to the effects and impacts of the plan's implementation. These initial objectives developed by the Planning Committee are the desired outcomes - the performance standards - from the planning process itself. They are:

1. Create a regional plan which outlines conditions, problems, issues and opportunities for water and water-related subjects in the South Sierra region and which presents recommendations for future studies, projects and monitoring related to each subject.
2. Collect and compile all existing information (data, studies and reports) pertaining to water and water-related subjects in the South Sierra region and
    a. Use this information to draw the conclusions and create the recommendations in the plan in a way that is transparent and scientifically sound;
    b. Link this information to the plan in a format so that it is readily accessible to planners, resource managers, developers and other stakeholders within the region with the potential of expanding this informational database to include future studies, reports, plans, etc.
3. Engage diverse stakeholders in the planning process such that
    a. Disadvantaged communities and other low-income or geographically isolated stakeholders are encouraged and assisted to participate;

b. Stakeholders are educated on water and water related issues in the region;
c. Stakeholders build capacity to work collaboratively within the region and with neighboring regions;
d. Resource managers from different agencies overcome barriers to working with each other and with the region's stakeholders.

4. Develop innovative and integrated management strategies which have broad stakeholder support.
5. Develop a process to prioritize projects which includes input from the region's diverse stakeholders
6. Provide information on conditions, issues, and regional priorities to future iterations of the State Water Plan.

c. Table of Contents of IRWM Plan

The RWMG has approved a preliminary Table of Contents for the South Sierra IRWMP. (See Attachment 1, end of this document). This Table of Contents has been helpful in identifying the scope of work of this application.

d. Strategies for Enhancing Integrated Resource Management within the Region

The South Sierra is a rural region characterized by a multitude of land management agencies. These agencies include the Forest Service (Sierra and Sequoia National Forests and Sequoia National Monument), the National Park Service (Sequoia National Park), Tribes (Tule River Indian Reservation, Big Sandy and Cold Spring Rancherias), Counties (primarily Fresno and Tulare) nonprofit entities (Sequoia Riverlands Trust) and private landowners. From the earliest Planning Committee meetings it was recognized that the IRWM Planning process should focus not only on specific projects for implementation, but also on ways to bring the agencies together to increase the effectiveness and identify potential synergies of their management efforts. Of course the region's stakeholders are eager to have access to implementation funding for their projects. But it is recognized that the region could also benefit greatly from improved relationships, data sharing, collaboration, and development of regionally consistent land use and resource management policies.

To this end, the Planning Committee and other stakeholders brainstormed a list of strategies to improve integrated management within the region. These strategies fell into three categories:

Category 1. Build effectiveness of regional planning by identifying possible synergies and increasing capacity for collaboration, public involvement, and integrated strategies.

Category 2. Maximize data collection, management and sharing

Category 3: Studies and research

A survey was developed and administered to Planning Committee members as well as other stakeholders (including staff from counties, agencies and other entities) who did not generally attend Planning Committee meetings but who clearly had an interest in the outcome. Respondents

were asked to rate each strategy as Urgent (3 points), Important (2 points) or Nice (1 point). The results were as follows: (priority strategies in each category are highlighted)

Category 1. Build effectiveness of regional planning by increasing capacity for collaboration, public involvement, and integrated strategies.			
Avg.	*# responses*	*Points*	*Strategy*
2.59	17	44	Find ways to bring the resource management agencies and organizations together to share data and information and to work collaboratively on policies, plans and projects.
2.31	16	37	Provide examples of best practices, technical assistance and training that furthers the implementation of multi-benefit/integrated management strategies.
2.12	17	36	Assist stakeholder agencies in improved outreach, public education and stakeholder involvement by providing forums for public discussion, e-mail notice lists, etc.
1.75	12	21	Construct data base showing all CEQA/NEPA documents in process, (example: USFS Schedule of Proposed Actions (SOPA)). Create notification system that will filter project by type, region, etc. that automatically will send out notices to interested stakeholders.
2.29	14	32	Help frame a cumulative effects analyses for the region which can streamline the process and enhance the value of the analysis for everyone. (Cumulative Watershed effects model analysis for the region)
2.11	9	19	Identify beneficiaries of region's ecosystem services/benefits. Engage in outreach and education to the beneficiaries to increase the likelihood that they will contribute to watershed health.
1.67	6	10	Education on legal issues
1.50	6	9	Develop curriculum/training program
Category 2. Maximize Data Collection, Management and Sharing			
2.29	14	32	Create a web portal with links to all planning documents and studies for the region.
2.08	13	27	Synthesize interagency databases from existing agency sets (e.g., South Sierra Geographic Information Coop)
2.36	14	33	Put together baseline watershed conditions for purposes of climate change, etc.
Category 3: Studies and Research			
2.53	17	43	Assess hydrologic capacity of region - amount of water available in fractured rock system.
1.93	15	29	Assess options for water storage infrastructure where needed.
2.07	15	31	Assess small system water quality problems and provide feasibility analysis for corrective actions.
2.00	15	30	Study the impact of septic systems on water quality

The results from this survey are integrated into work plan for this IRWM Planning Grant application. The ultimate output of the proposed planning effort will be an IRWM Plan for the region. But the process by which the plan will be developed is designed to promote the priority

strategies identified above. (This is discussed further in Section B. below: Proposed IRWM Planning Approach). Some of the priorities identified were not appropriate for the IRWM scope of work (e.g., Assessing small system water quality problems and providing feasibility analyses for corrective actions). Other items can only be partially addressed through the IRWM resources. The Planning Committee/RWMG has identified some possible other sources of funding to address these priorities and will continue to seek resources to meet these priority items.

3. The Region

a. Description of region

The South Sierra Integrated Regional Water Management region is located in the Tulare Lake Hydrologic Region. The Sierra Crest represents the region's east boundary, and the 600-foot topographic contour line is the general location of its west boundary. The boundary of the SSIRWM has a common northern border with the Madera IRWMP and a common southern border with the Kern County IRWM Program. Boundaries at the crest of the San Joaquin, Kings, Kaweah, Tule, Deer Creek, Poso, White and Kern watersheds are shared by the Inyo – Mono IRWM Program, and follow the county lines that generally divide the Sierra's west slope from the east slope. This Region covers the upper watersheds of the San Joaquin, Kings, Kaweah, Tule, Poso Creek, Kern River, and other smaller rivers (Deer Creek and White River). A map of the region is attached (Attachment 3).

An informational document was compiled for the watersheds in the region and is included as Attachment 8. This memo includes information for each watershed on the area's managing entities, the existing water/resource management plans and planning processes, an assessment of 'capacity', ongoing projects, watershed issues, and identified project needs. The proposed IRWM planning process will develop additional information on these watersheds and the region in general, including a Greenhouse Gas inventory and a Climate Change vulnerability assessment.

b. How the Region was Selected

The Planning Committee approved the regional boundaries after numerous discussions and evaluations. Boundaries for the SSIRWMP were decided in open public meetings with open participation. The process for developing regional boundaries of the SSIRWMP was challenging, since it involved developing an internal rationale in parallel and in coordination with neighboring IRWMP efforts. The Planning Committee started with the following internal rationale, which has been modified to some extent through negotiations with adjacent areas:

> The Southern Sierra IRWMP boundaries include the foothills and mountain headwaters regions of Kern, Tule, Kaweah, Kings, and San Joaquin and other smaller watersheds. These watersheds cover the Sierra Nevada portion of Madera, Fresno, Tulare, and Kern Counties. This primary boundary includes the Sierra Nevada Ecosystem Project (SNEP) boundaries, but it is adapted to be consistent with and complementary to neighboring IRWMP efforts, especially with respect to land use. Specific boundaries are defined as follows:

- To the east, the Southern Sierra IRWMP boundary is defined by the Sierra Nevada crest.
    - Rationale: Waters flowing to the west from the Sierra crest are source waters for foothill uses and management. Precipitation falling west of the crest drains the western slope of the mountain range and is connected hydrologically with the Tulare and San Joaquin basins.
- To the north, the Southern Sierra IRWMP is defined by the Upper San Joaquin watershed.
    - Rationale: The upper San Joaquin River basin is split between Fresno and Madera Counties, and the river is managed across counties. The issues on either side of the county line are similar, and contrast sharply with downstream users in intensive agricultural areas outside of the Sierra Nevada Region. The San Joaquin watershed shares many of the same issues with watersheds further south in the region.
- To the west, the Southern Sierra IRWMP boundary includes the foothill areas of the region's watersheds.
    - Kings River Area, the SSIRWMP boundary extends the District boundaries of the Tri Valley, Orange Cove, and Hills Valley Water Districts east of the towns of Orange Cove, Orosi and East Orosi. East of the city of Fresno, the boundary extends to the boundaries of the Fresno Metropolitan Flood Control District, the International Water District and the Garfield Water District.
        - Rationale: This boundary was negotiated with the Upper Kings River Forum Regional Water Management Group to match UKRF boundaries.
    - Kaweah Delta area, the SSIRWMP boundary extends to the Kaweah reservoir or the 600-foot contour in the Kaweah River Drainage. Further, the boundary follows the RWQCB Irrigated Lands Program and generally follows surface water-ground water usage boundaries. In the aquaculture/Lewis/Avocado area, the boundary will be the 600' elevation contour and squared to section lines; the agriculture north of Elderwood will be in the KDRWMG.
        - Davis Valley, the Westside has small, irrigated lands while the east and the north are rangeland. The boundary will follow section lines in these areas.
        - Dry Creek, the boundary will follow land use: irrigated lands will be part of the KDWMG and grazing land will be in the SSIRWMP.
        - Mehrten Valley, the 600' contour will be the guide, most of the valley will be in KDRWMG.
        - Yokohl Valley, most of the western valley will be in the KDRWMG while the eastern portion of the valley will be in the SSIRWMP. In Round Valley, east of Lindsay, the KDRWMG will include a few small areas east of the Irrigated Lands Program, the boundary will again be based on land use and squared to the section lines.

- Rationale: This boundary was negotiated with the Kaweah Delta Water Conservation District Regional Water Management Group to match KDWCD boundaries.

  - Tule River Area, the SSIRWMP boundary includes the Tule River Indian Reservation and down to approximately the 600-foot contour in all forks of the Tule and squared to section lines. The Deer Creek Tule River Authority planning area will follow irrigated lands while the SSIRWMP will follow rangeland.

    - Rationale: This boundary was negotiated with the Deer Creek-Tule River Authority Regional Water Management Group to match that region's planning boundaries.

- To the south, the Southern Sierra IRWMP boundary is defined by the Tulare-Kern County line.

    - Rationale: the Kern watershed's water resources will be managed by both SSIRWMP and Kern County Water Agency IRWMP. The two entities will work collaboratively in the watershed across the county boundary.

Subsequent to the selection of the initial boundaries, the adjacent IRWMP regions to the north and south made last-minute determinations regarding their shared boundaries with the South Sierra region which resulted in modifications of the initial regional delineation. These modifications consisted of the following: In Madera County, the mutual boundary follows a tributary north of Mammoth Pool Reservoir to the Sierra crest, this refined the boundary based on the interests in Madera County. In the south, the boundary with the Kern County IRWMP region follows the Tulare-Kern County line. These final modifications were approved by the Planning Committee in their meeting of April 22, 2009. MOUs have been signed with both of these adjacent IRWM RWMGs to assure coordination and cooperation of efforts on inter-regional issues (See Attachment 3.)

4. Existing IRWM Plans – The South Sierra Region currently has no IRWM Plans and no history of IRWM planning. The Southern Sierra Integrated Regional Water Management Planning effort was initiated in Spring 2008 through the actions of the Sequoia Riverlands Trust, the Sierra Nevada Alliance and the Sierra Nevada Conservancy based on their concerns that the region was missing out on essential planning and management resources. This is truly the first integrated planning effort that has taken place for the region.

Even though there has been no integrated planning effort in the region, there have been plans created by various land management agencies. These plans have been compiled and summarized so that the information they contain can be integrated into the SSIRWM Plan. The table listing current plans is attached (Attachment 4).

5. Public process used to identify stakeholders and how they were included in the planning and decision-making process for the IRWM application and planning to date

The Southern Sierra Integrated Regional Water Management Planning effort was initiated through the actions of the Sequoia Riverlands Trust, Sierra Nevada Alliance, and the Sierra Nevada Conservancy. The Sierra Nevada Conservancy provided a grant to Sequoia Riverlands Trust to fund a launch phase of the planning process to identify stakeholders, hold public meetings and write a planning grant application to the California Department of Water Resources. In preparation for the initial planning meeting, the Sierra Nevada Alliance prepared a list of stakeholder groups in the area, representing issues such as water supply, water quality, environment/habitat, recreation, agriculture and ranching, resource management, hydropower, cities/counties, sanitation, other water resource management areas, economically disadvantaged local communities and individual local stakeholders. At the time the IRWM process was initiated, 90 stakeholders had been identified and contacted. During the past two years, 43 stakeholders have attended at least one SSIRWMP meeting.

The first organizational meeting was held on May 21st, 2008. It included 26 stakeholders representing 19 agencies. Following this initial meeting, the IRWM participants began aggressive public outreach and held monthly meetings. Outreach was conducted to numerous interest groups, federal, state and local agencies as well as non-governmental organizations.

The IRWM Program makes consistent efforts to include more interest groups and the public in this process (see Attachment 2, SSIRWMP email notification list). Meeting agendas and minutes are circulated to a broad and inclusive group of interests. These include local agencies with facilities within the region, public utilities, federal agencies, state agencies, local tribal interests, business groups, environmental groups, etc. The agendas and notices of IRWM monthly meeting are posted on the SRT web page (http://www.sequoiariverlands.org/learn-irwmp.html) as well as in the SRT office approximately 5 to 6 days in advance of the monthly meetings.

The Planning Committee has reached out to adjoining or nearby IRWM Programs to assure coordination of newly emerging programs with those like the South Sierra, including the Madera IRWM to the north, the Inyo-Mono to the east, and the Kern IRWM to the south.

6 . Process used to identify the region's DACs and how they have been engaged in the IRWM Planning process

The Counties which constitute almost all of the South Sierra IRWM area (Fresno and Tulare) include both valley and foothill/mountain areas within their boundaries. Their major population centers are located in the valley areas. The population in the foothill/mountain region are scattered throughout a large area and are difficult to serve. These two counties are poor with limited resources. Their cities and towns on the valley floor have many needs and are easier to serve than the somewhat less populous communities in the foothills mountains. Consequently these more remote communities have received few services and resources.

The communities in the South Sierra IRWM area consist of approximately 17 small towns (population 1500 or less), none of which are incorporated. Approximately half of these meet the definition of disadvantaged communities, (MHI<$37,994)[1] as follows[2]:

Town	Zip Code	MHI	Town	Zip Code	MHI
Shaver Lake	93664	42,167	Squaw Valley	93646	23,280
Auberry	93602	42,885	Pinehurst	93641	30,357
Lakeshore	93634	45417	Badger	93603	21,838
Prather	93651	41,341	Three Rivers	93271	44,432
Toll House	93667	50,227	Pineridge	93602	42,885
Miramonte	93641	30,357	Posey	93260	28,929
Dunlap	93621	17,063	White River	93207	22,188
Springville	93265	50,256	Kernville	93238	27,955
			Johnsondale	93208	36,607

There are also three federally recognized Indian Tribal Reservations or Rancherias in the region: Big Sandy (MHI 19,250), Cold Springs (MHI 35,000) and Tule River (MHI 30,625), all of which meet the DAC criteria. The towns listed above which do not meet the DAC criteria are areas where the tourism industry brings in more money and attracts higher income residents. But historically the populated areas were built around extraction or agricultural industries (mining, cattle and logging) and suffer from low income and poor infrastructure conditions. They are also generally isolated and remote. This has made it a challenge to engage the residents in the IRWM process. The SSIRWM has made consistent efforts to overcome these challenges as set forth below, but has met with only limited success to date. Based on this the proposed IRWMP planning process includes significant tasks and resources to improve the involvement of these disadvantaged communities.

The initial outreach efforts by the Sierra Nevada Alliance included identifying stakeholders in these disadvantaged communities. Staff put together a list of Tribal representatives, Community Service Districts, Village Foundations, Resource Conservation Districts and nonprofit organizations which served the communities. Continuing efforts have been made to add to this list. In addition, the SSIRWM project manager arranged meetings with the Community Water Center and Self Help

[1] In rural areas it is more accurate to use the 2000 Census figures rather than the Dept. of Finance estimates. This is because these estimates are not done on a small enough geographic area to capture the true income of a community.

[2] In order to get more of a picture of the communities themselves, we have listed MHI by the communities' zip codes. In rural areas, zip codes tend to be more accurate than block groups for this purpose because they follow community boundaries more accurately. Many times communities are separated into multiple block groups which, because of the low population density, also include wealthier areas in nearby cities.

Enterprises, two nonprofit organizations which provide infrastructure assistance to disadvantaged communities in the larger region. Both of these entities acknowledged the needs of these communities and both stated that they did not have the resources to serve them – all of their resources are currently directed at the needy valley communities. They also gave their support to the SSIRWM effort to include these DACs in their process and direct resources toward their needs.

There have been a few representatives of these DACs who have attended the IRWM Planning Committee meetings, including representatives from the Tule River Indian Tribe. In an effort to better reach the non-participating communities, SSIRWM representatives have done some direct outreach, but the resources for this were limited and presentations were only made in three of the DAC towns. The most effective strategy with our limited resources was to contact organizations that represented several of these communities. Meetings were held with the Sierra RCD, the Tulare County RCD, and the Tulare County Public Health department to try to understand the needs of these disadvantaged communities. The SSIRMWP has also sought additional grant funding to do better direct outreach and to provide travel stipends to DAC representatives, but to date these grant applications have not been successful.

Based on the direct experience of the difficulties in serving the region's DACs, the proposed IRWM Work Plan includes significant resources to improve DAC participation, including

- Outreach meetings in DAC areas
- Travel/participation stipends for DAC representatives to attend meetings and workshops
- Resources to assist the DACs in establishing watershed committees - a sustainable way to promote public education and community involvement in natural resources planning and projects.

A more detailed description of these strategies is outlined in the Work Plan Task Descriptions below.

B. Proposed IRWM Planning Approach

1. Overall Approach

The SSIRWM Planning Committee/RWMG has developed an approach which is designed to bring benefits to the region beyond the creation of a planning document, eligibility for implementation grants, and the prioritization of projects for funding. The process is designed to meet the specific needs of the region for

- Collaboration between land management entities, local government, and Tribes
- Improved public involvement in decision-making
- Integration of natural resource management policies throughout the region
- Data sharing for efficient and effective management
- Building the capacity of stakeholders to obtain funding and successfully implement plans and projects.

- Baseline studies that can help frame climate change and cumulative effects analyses within the region.

The Planning Committee and other stakeholders identified these priority needs over several months through meetings, surveys and prioritization exercises. The proposed Work Plan and Budget is designed to address these needs at the same time as producing a comprehensive, effective, and stakeholder-driven IRWM Plan. The strategies for accomplishing this are as follows:

a. The overall planning process - specifically the public outreach and input - will be managed by a local team hired or contracted through the project's fiscal agent. The goal is to hire a local project manager, facilitator and administrator who already have knowledge of the area's issues and who have a commitment to continued involvement in resource management within the region. A planning firm with appropriate technical expertise will be hired to compile the information and draft the plan (according to the Table of Contents developed by the Planning Committee, see Attachment 1 and end of this document), but the oversight of their work and the management of the public input will be done by the local management team. *This management strategy will build local capacity to formulate and implement plans and projects collaboratively and thereby to continue the IRWM process after this grant is completed.*

b. Public input and review of the plan's contents and recommendations will take place throughout the two-year planning process, not just at the end. The current Planning Committee (hopefully expanded through the involvement of additional stakeholders) will continue to meet bi-monthly. The firm hired to draft the Plan will make presentations at every meeting, generally consisting of the drafts of 2-3 chapters of the Plan – including both the compiled information about the subject area and the recommendations for priority studies, projects and monitoring. This will give the Planning Committee an opportunity to absorb the background material, provide any missing information, and fully participate in determining priority recommendations. In addition, the Coordinating Committee (functioning as a steering committee) will meet monthly to provide more hands-on assistance and guidance to the planning firm. *This public input design will serve to broaden and improve the stakeholder's knowledge about the region, increase their involvement with policy issues, and build relationships which can lead to future collaboration.*

c. The planning process will have a website which will provide information about the process, drafts of Plan chapters as they are prepared, and electronic versions of the background studies and reports on which the Plan is based. These studies and reports will be linked to the footnotes of the on-line Plan utilizing a resources database so that they are easily available for download. *This data management strategy will increase stakeholder knowledge and facilitate access to data to build the efficiency and effectiveness of other planning efforts for the region.*

d. During the planning process, six all-day workshops on key issues (such as flood control, climate change mitigation and response, water quality, etc.) will be organized to discuss potential integrated strategies for the region and help develop specific recommendations for key areas of the plan. The workshops will also feature examples of best management practices, provide technical assistance and training on multi-benefit strategies, and develop specific collaborations around implementation projects. *This strategy will increase collaboration among land management agencies and other stakeholders and will assist with the integration of natural resource management policies and projects throughout the region.*

e. DACs will be encouraged to participate in Planning Committee meetings and key issue workshops by providing travel stipends to interested DAC representatives. *This strategy will enhance DAC involvement, improve land manager/community relations, and facilitate public involvement in decision-making.*

f. DAC involvement will be further encouraged by input/outreach meetings held in the rural areas. The project manager and other staff will also provide assistance to DACs interested in establishing watershed committees for their communities. *This is a sustainable way to promote public education and involvement in decision-making.*

g. The Work Plan will include resources to assess the needs for a comprehensive data management portal/decision tool for use by land managers, researchers, and other stakeholders in the region in their planning and decision making. This needs assessment will be used to complete an initial design and scope of work for such a data management portal project. With this design and scope of work, the region will be in a good position to obtain the funding needed to implement such a project in the future. *This strategy will promote data sharing for efficient and effective management, and to will assist in framing climate change impact and cumulative effects analyses within the region.*

h. The regional stakeholders have identified a critical need for study to increase understanding of the hydrologic capacity of the region. Appropriate water management strategies (and associated land and resource management policies) cannot be developed in the absence of this information. The California Water Plan has little useful data for the foothill/mountain portion of the Tulare Lake region. No groundwater management plan has been done for the region, mostly because the funding for accomplishing such (AB3030) plans was focused on groundwater basins and the region's groundwater is almost entirely stored in hard rock fractures. Representatives from the South Sierra Regional Water Management Group met with DWR representatives to discuss the possibilities of working together to build more knowledge about this area. The South Central Region staff stated that it was their intent to request funding to conduct special studies to address the local water management needs of the watersheds and communities in the Sierras. However the availability of funding and resources for such studies is uncertain and may take some time. DWR staff did state that they have current capacity to provide technical assistance to the Southern Sierra group as it moves forward with its planning process. Some of the

assistance could come as technical advice concerning project scope and objectives, data gathering and evaluation, and participation in technical and public meetings.

The Planning Committee also consulted with hydrogeological consultant Kenneth Schmidt about performing groundwater studies in the region to determine hydrological capacity. His proposed scope of work for a hydrogeologic evaluation is attached (see Attachment 5). It includes the following tasks:

a. Assembling and supplementing geologic data
b. Studying sample wells to determine well depths and air test yields, determining annual pumpage from water system wells and estimating total well pumpage for the study area
c. Water level measurements in representative wells
d. Delineating/mapping watersheds and determining water budget
e. Developing understanding of hydraulic connections between streamflow and groundwater
f. Delineating water quality problem areas

Mr. Schmidt estimated the cost of such as study as $126,000 per study area and identified nine potential study areas within the South Sierra region. Because of this high cost, the RWMG has determined that only one study area should be included in the IRWMP scope of work. The proposed study area, Three Rivers, will provide useful information since it includes both hard rock and 'transitional alluvium' water storage, and in addition, is an area where development pressures and water conflicts are present. This study will further leverage knowledge of the hydrologic capacity of the region. It will also provide information to DWR for their future Water Plan Updates.

Finally, we are fortunate in that Forest Service scientists at the Kings River Experimental Watershed and Southern Sierra Critical Zone Observatory are implementing studies within the region, collecting data and developing water budgets for headwater streams in the southern Sierra Nevada. Sixty percent of California's water originates as small streams in the Sierra Nevada, yet very little information is known about how these streams are affected by management activities at their source or how their water budget differs with regard to precipitation variability and the dominance of rain vs. snow inputs. Forest Service staff and their university collaborators are collecting data and developing water budgets for headwater streams in the southern Sierra Nevada. This water budget allocates the incoming precipitation into output components: stream flow, shallow and deep groundwater, and vegetation evapotranspiration. The Forest Service also has developed rating curves for small headwater streams in this region. Such relationships allow prediction of stream flow based on precipitation amount for ungaged streams[3]. The budget includes a modest amount of money for the Forest Service to provide a synthesis of their research and monitoring data on headwater mountain streams, water budgets for mountain areas, and predictive capability with the other hydrological information for the region. This information will help build a comprehensive understanding of the region's hydrological capacity.

In addition to the hydrogeologic studies, the IRWMP will include a section that is the functional equivalent of a Groundwater Management Plan and meets the requirements for Local Groundwater

[3] Most of the headwater streams are ungaged even though they are the primary source of surface water from the mountains to the valley.

Assistance grant funding[4]. This will assist the region in obtaining future funding for additional studies, monitoring and projects related to groundwater.

2. Process to be used to identify the regions' water related objectives and conflicts

A complete list of water-related conflicts within the region (inter-regional AND intra-regional) will be identified during the planning process through research by the planning firm and public input sessions. Much of this information is already available. Water management issues for the region are broad and include water supply, water quality, flood management, environmental stewardship, water transfers, and infrastructure development. Many IRWM Planning Committee agencies and interest groups have participated in complex resource management programs and processes including but not limited to: Forest Land and Resources Management Plans, City and County General Plans, Federal Energy Regulatory Commission hydroelectric license processes, California Environmental Quality Act preparation and review, National Environmental Policy Act review and other administrative actions. These programs have identified water management issues for the region, which will be compiled as part of the IRWM Planning process. However, some key issues that have already come to the surface include:

- The need to provide clean, sustainable and affordable water supply for the communities in the IRWM Program area, particularly DACs.
- The presence of water rights holders whose customers are located outside of the Program area and the watersheds. These present a challenge common to many areas of California water resources where there is a disconnect between source waters and use of those waters chiefly for municipal and irrigation purposes.

[4] Such plans must be adopted and must include:

- Purpose, goals and map
- Strategy for updating and implementing plan
- Description of public process and cooperation
- Groundwater goals, objectives and targets.
- Discussion of groundwater issues including 1) control of salt water intrusion, 2) identification and management of wellhead protection areas and recharge areas, 3)Regulation of the migration of contaminated groundwater, 4)The administration of a well abandonment and well destruction program, 5)Mitigation of conditions of overdraft, 6)Replenishment of groundwater extracted by water producers, 7)Monitoring of groundwater levels and storage, 8)Facilitating conjunctive use operations, 9)Identification of well construction policies, 10)The construction and operation by the local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects, 11)The development of relationships with State and federal regulatory agencies, 12)The review of land use plans and coordination with land use planning agencies to assess activities which create a reasonable risk of groundwater contamination.
- Monitoring protocols and their relationship to efficient and effective groundwater management

- Development is guided by General Plans that were adopted by the land use planning agencies (local governments). Population growth in the IRWM region has generally exceeded the California average annual growth rate. The foothill and mountain communities in the Program area expect to continue to grow, causing additional stress on the environment and water supplies.

Some of the key water conflicts and management issues were identified in the surveys implemented in 2009/2010 by the Planning Committee. It is expected that additional conflicts and issues will arise out of the Climate Change vulnerability analysis which will be a part of the IRWM planning process.

The identification of IRWM Plan objectives, key issues and conflicts is one of the first tasks which will be undertaken by the Planning Committee. This can be a sensitive task since it involves the discussion and delineation of conflicts. The SSIRWMP has been negotiating with DWR for facilitation assistance through the Center for Collaborative Policy. If such assistance is granted, the Planning Committee expects to take advantage of this resource to work on the identification of these issues. If possible, this work will be done before the IRWMP grant is implemented. That will help to insure a speedy initiation of the IRWMP planning process.

3. Process to be used to determine criteria for developing regional priorities

There are three venues in which criteria for developing regional priorities will be determined during the IRWM planning process:

a. Developing recommendations in Plan – Each issue-related chapter of the IRWM Plan (water quality, habitat preservation, flood control, etc.) will consist of background information, an analysis of key issues, and a set of recommendations. These recommendations will include studies, implementation projects, and monitoring plans that are needed for management in that specific issue area. These recommendations will not be a prioritized list for purposes of funding. Instead they will provide guidance for implementing agencies on selection of projects to bring forward to the RWMG which are most likely to be selected for funding approval. The recommendations will be proposed by the planning firm based on discussions with stakeholders and research of existing studies and reports. They will then be vetted and revised by the Coordinating Committee and finally will be revised and adopted by the Planning Committee in accordance with the SSIRWMP values.

b. Developing criteria and process for prioritization of projects for funding – As part of the IRWM Planning process the RWMG will develop criteria and processes for prioritization of projects for IRWM implementation and other funding. This will be part of the governance structure and implementation strategy.

c. Development of Collaborative Projects – The IRWM process includes stakeholder workshops which will focus on the issue areas of specific concern. These workshops will be partially informational, presenting best practices and integrated strategies that have been successfully used in other regions to address these key issues. However they will also offer

an opportunity to initiate discussion on priorities, develop project concepts, and initiate collaborative action. The workshops will include technical resources and facilitation assistance that can launch these project discussions in a successful manner.

4. Data and technical information– how it will be collected, analyzed and managed

The process for collecting, analyzing and managing technical information is very important to the SSIRWM region. 'Data sharing for efficient and effective management' was one of the priority strategies which emerged from the stakeholder surveys discussed above. The SSIRWM planning process proposes a multi-level strategy in this area:

a. **Collecting existing plans and studies** – The SSIRWMP has already collected and summarized many existing plans and studies pertaining to region. (See Attachment 9). These plans will continue to be identified, collected and summarized during the IRWM planning process and the information provided to the planning firm that will be drafting the IRWMP.

b. **Data analysis** - The planning firm will utilize the available plans, reports and studies as a basis for the IRWM Plan chapters, including background, key issues, and recommendations. The Coordinating Committee will review this work to make sure that the conclusions match the data. Where necessary, technical advisory committees will be convened to oversee the use of data in specific issues areas, including

    i. Quality of data used,
    ii. Methods of Analysis, and
    iii. Comprehensiveness of sources.

    The Planning Committee will also have a chance to review and question the conclusions and the data that supported the IRWMP findings during the planning process.

c. **IRWMP data management web portal**. The proposed Budget includes resources to provide an IRWMP outreach and data management web portal. This portal will provide notices and a calendar of events related to the IRWMP planning process. However it will also be used to provide access to the plans and studies used to create/support the IRWM Plan. A database will be created at the beginning of the planning process which will hold digital copies of all plans, studies, reports, etc. used in the creation of the IRWMP. This database will be linked to a system such as 'Endnotes' which will integrate the database with the IRWMP drafts (so that the reference footnotes in the drafts can be direct links to copies of the actual references.) It will additionally allow the items in the database to be categorized by subject matter and geographically (by subregion and/or by watershed). This will make it easy for those searching for regional information in specific areas. The completed IRWMP will be published on-line with the citations linked to this database of documents. This will make it easy for those reading the IRWMP to have access to the source documents.

    This database will be structured so it can be expanded and updated in the future. This will provide the region with a basic planning document database that is searchable by subject matter and geography. Such a resource will meet the needs of the region for data sharing to

enhance planning efforts. In addition, the database will be formatted such that the information can be brought into a GIS environment in the future to create an even more powerful planning tool.

d. Assessment and design/scope for a comprehensive data management and analysis tool. There are at least three existing efforts within the region to collect data and develop tools for regional analysis. These include:

- The Forest Service's 'Cumulative Watershed Effects'(CWE) analysis database, which lists existing projects on Forest Service land and their individual impacts on the watershed. When a new project is proposed, the cumulative effects of the proposed project on top of the existing project impacts can be analyzed according to a specific type of 'risk' model. The Forest Service model is set up in specific ways that may not be appropriate for some other agencies or other applications. However, the database of projects and impacts will at least be useful for other environmental impact analyses that will take place within the region. There may be other CWE models in the region which can add to the database of existing projects and impacts.
- The SSCC Climate Change Information Clearinghouse. The Southern Sierra Conservation Cooperative is a collaborative group consisting of federal land management entities within the region, led by Sequoia/Kings Canyon National Park. The SSCC has a grant to create an information clearinghouse for the South Sierra region with a focus on climate change impacts and mitigation. The goal is for these agencies to be able to make better land use decisions to respond to climate change challenges, including increased risk of fire, modification of habitat, etc. The funding SSCC has obtained is only sufficient to conduct an assessment of potential users and to propose a design for the system. Additional funding will be needed to implement this project. Also, much of the information in this system will be confidential and not available to those outside of federal agencies. A working version of the 'Conceptual Proposal to Establish a Southern Sierra Conservation Cooperative to Collaboratively Adapt to Accelerated and Unprecedented Climate Change' is attached (see Attachment 4). The SSIRWMP will continue to coordinate with this effort to assure consistency and best use of resources.
- UC Merced - Sierra Research Institute's Southern Sierra Critical Zone Observatory (CZO). The Southern Sierra CZO is a community platform for research on critical-zone processes across the rain-snow transition in the mixed-conifer forest of the Southern Sierra Nevada. While this elevation range has characteristically rapid seasonal changes, going from snow cover to wet soil to dry soil over a 1-2 month period, climate warming will shift this transition period earlier or eliminate it entirely at the current transitional elevation. The characteristic spatial differences along gradients offer the opportunity to substitute space for time, making the CZO an excellent natural laboratory for studying how critical zone processes respond to perturbations, and particularly how the water cycle drives critical zone processes. This project includes a digital library for .tsv files, including metadata. A relational database interface is under development.

The survey implemented by the Planning Committee identified the need for some tool which would streamline the complex analysis involved in determining cumulative effects and/or changing conditions. Ideally this tool would integrate GIS capabilities. All of the projects listed above provide elements that would be useful in such a system, but neither

are appropriate for use by the general public. The creation of such a data management tool will be a complex task and will require both resources and time that exceed the IRWM Planning process. However it would be valuable to take the first steps toward development of such a tool. These first phase tasks will include an assessment of potential users including such questions as:

- What data will be useful for them to have
- Who will use it (what positions in the organization)
- What are their skill sets
- What questions would they ask
- What is the current format of the data and what would it take to put it in electronic/GIS format
- What kind of decisions do these potential users make now and what information do they use to make it?

Based on this assessment, a scope of work for the design and implementation of such as system can be developed. This assessment and design/scope will make it possible for the South Sierra IRWM to seek additional funding to make this planning tool a reality. Such a tool will provide an important continuing resource to assist integrated regional planning efforts in the future.

5. Development of integrated resource management strategies

Integrated resource management strategies will be developed in three ways:

a. Integrated strategies will be part of the recommendations developed for each substantive chapter of the IRWMP. These can be proposed by the planning firm, the Coordinating Committee, and/or the Planning Committee as each chapter is drafted and reviewed.

b. The planning workshops on key issue areas will also be designed to promote the development of integrated, multi-benefit strategies. This will occur both through the presentation of best management practices in other regions, and through the facilitated discussions following the presentations.

c. Once the Plan has been adopted, integrated strategies may be proposed by individual project proponents for prioritization and funding approval. The prioritization process developed for the consideration of these proposals will include additional points for projects that have integrated strategies and multiple benefits.

6. IRWM Plan implementation – expected impacts and benefits

a. Overall goal for Plan implementation – The IRWM planning process is being developed in such a way that it will promote successful and sustained implementation of the resulting Plan. Specific strategies include:

i. Sustainability of effort –The Southern Sierra region is multi-jurisdictional so there is no one agency which would be the obvious entity to oversee the implementation of the Plan. This creates a danger of the entire IRWM effort simply disappearing after the planning grant is completed. The process is therefore being designed such that stakeholders from the multiple agencies provide time and effort throughout the

process. In fact, such participation has already established over the past two years through the activities of the Planning and Coordinating Committees. This allows the buy-in and institutionalization of the IRWM effort within these regional agencies. The process is also being designed to provide value to these agencies so that their contribution of staff time is considered a worthwhile investment.

The planning process is also designed so that the leadership and day-to-day project management comes from local entities. Planning firms will only be used for technical tasks. This also helps institutionalize the effort within the local entities which can continue to provide leadership to the RWMG in the future.

ii. Capacity building – The process includes many opportunities for regional entities to increase their capacity to develop and implement projects. These include the educational workshops, the individual assistance to watershed councils, and the hands-on involvement in reviewing Plan chapters and strategies, all of which will build knowledge of problems, issues, and effective solutions.

iii. Collaboration – Many opportunities are provided during the Planning process for stakeholder agencies and organizations to have positive contact with one another and to share information and concerns. These opportunities have already begun to take place during the development of the IRWM structure and planning strategies over the past two years, and will be continued during the proposed two year IRWM Plan development process. In addition, the planning process encourages and facilitates involvement by community stakeholders. The communication, familiarity and trust - already started over the last two years - will be strengthened during this process which will help avoid unnecessary and destructive polarization and will promote positive resolution of issues and conflicts should they arise.

b. Specific impacts and benefits – The specific impacts and benefits that will result from this planning process and the resulting Plan fall into three categories: 1) the issues, data and analyses developed in the plan; 2) the processes by which future proposals will be developed and prioritized for funding ; and 3) the working relationships within a broad community of stakeholders. These will include at a minimum:

- Better access to regional data, studies and reports for more effective, coordinated and collaborative planning by stakeholder agencies
- Improved regional resource management through coordinated policies and projects
- Better integration of water related issues and development of multi-benefit resource management strategies
- Increased knowledge (agency and public) of the key regional issues and concerns, especially the impact of climate change
- Much improved stakeholder capacity to obtain funding and implement resource management
- Much improved DAC capacity to obtain funding and implement water improvement plans
- Consensus-based, collaborative working relationships that help prevent conflicts over resources and funding
- Dispute resolution processes already in place should disputes arise.

C. Work Plan Task Descriptions

General Overview of Work Plan –

- The IRWM Planning Process will be a 24 month process. Two months are included at the beginning of the process for ramping up (bidding, contracting, etc.) and two months are scheduled at the end for the final report and completion of administrative tasks, giving the total project a 28-month timeline.

- The process will be managed by the applicant, which has been selected by the Planning Committee as the fiscal agent for the RWMG. The applicant will hire or contract with three part-time staff to manage the day-to-day activities: a Project Manager, a Facilitator[5] and an Administrative Assistant. It is expected that this staff will continue with the project over the 28-month period to provide continuity. The applicant will contract with a planning firm which will be responsible for collecting regional information and drafting the actual IRWM Plan. However management of the Planning and Coordinating Committees as well as other public input processes and informational workshops will be done by the Project Manager. This strategy will build and retain capacity within the region.

Task 1: Manage Collaborative Process and Public Input.

This task comprises all of the general management and administration tasks for the proposed planning process, including public input, review by the SSIRWM Planning and Coordinating Committees, other public outreach and input meetings (including the process of plan adoption), development of the project website, travel stipends for DAC representatives, administration of consultant and staff contracts (including the planning firm), IRWMP grant administration, and administrative overhead. Details are as follows:

Subtask 1a: Management of the SSIRWMP Planning Committee/RWMG. This Committee will be responsible for the review and approval of the IRWMP chapters and the final IRWMP plan. It will also develop Plan objectives, the Plan management and governance structure, the process for review and prioritization of projects, etc. Planning Committee meetings will be open stakeholders and the general public, whether or not official Planning Committee members. This committee will meet every other month for the 24-month planning period (=12 meetings). The budget reflects preparation, travel costs and attendance for the Project Manager, the Facilitator and the Administrator, who will develop and distribute the agendas for the meetings, coordinate the involvement and presentations of the planning firm, provide advance material for review, take minutes, etc.

Subtask 1b: Management of the SSIRWMP Coordinating Committee. This group acts as a steering committee for the process. They will meet monthly, half of which meetings will be through

[5] The Planning Committee feels strongly that the Facilitator should be an independent consultant who is not a member of and does not represent any of the participating stakeholder groups.

conference calls and the other half in person. The Coordinating Committee helps to oversee the planning process and approves agendas for the meeting. It also acts as the initial review team for drafts of the IRWMP chapters and assists with the development of recommendations (studies, projects and monitoring) for each issue area. It also evaluates bids and proposals and makes recommendations to the Planning Committee regarding contractors and staff.

Subtask 1c: Outreach/Input Meetings. The project staff will organize and facilitate outreach/input meetings for the IRWMP to educate and obtain input from stakeholders who are not able to attend Planning Committee meetings. This includes DAC representatives, staff from agencies without the resources to travel to PC meetings, etc. These meetings will be held every other month during the planning period.

Subtask 1d: Website/data management system development and maintenance. A consultant will be hired to develop a SSIRWMP website/portal. The website/portal will include

- A description of the IRWM Planning and Implementation processes
- A calendar of meetings and events related to the planning process and to other IRWM issues,
- Educational presentations on the IRWM effort and other related issues
- Current drafts of the IRWMP chapters as they are developed
- A searchable database of documents and studies linked to the IRWMP (citations and references)

The applicant, project staff and/or consultants will be responsible for maintaining and updating the website during the period of this grant.

Subtask 1e: Develop public education materials. Electronic and print materials will be developed outlining the IRWMP process, its significance and benefits, and opportunities to participate.

Subtask 1f: Plan Review and Adoption. The project manager will provide information and coordinate presentations to key stakeholder Boards in the region whose adoption of the IRWMP would be beneficial. It is estimated that this will include 20 entities. The adopted plan will be made available in electronic and print form.

Subtask 1g: Travel. This expense item allows local staff travel to meetings and presentation, and travel by key staff to important statewide meetings. Funding is also included for travel stipends. These will be available to representatives from DACs, tribes, and local nonprofit organizations who would otherwise not have the resources to attend SSIRWMP meetings .

Subtask 1h: General Project Management: This task includes but is not limited to:

- drafting quarterly and final grant reports,
- overseeing the planning firm's work in drafting the IRWMP and making regular presentations to the Coordinating Committee, Planning Committee, and other groups,
- working with stakeholders to build collaborations for related projects and funding opportunities,

- attending meetings within and outside the region to discuss the South Sierra IRMWP process and coordinate with other collaborative efforts (such as the Southern Sierra Conservation Cooperative),
- developing funding and staffing mechanisms to assure a sustainable IRWMP implementation process.

Subtask 1i: Misc. project expenses: This expense item covers expenses necessary to support the numerous meetings which are a part of the IRWMP planning process.

Subtask 1j: Grant administration and indirect/overhead: This task includes submission of reports and invoices to DWR, tracking expenses, contract bidding and oversight, responding to information requests, misc. secretarial and administrative tasks, etc.

Task 2: Develop and Implement Issue-Specific Workshops

Six workshops will be held during the two-year IRWMP Planning process. These all-day workshops will be focused on issues that are critical to the region, as determined by the Planning Committee. Examples may be climate change assessment and response, flood control, vegetation management, small community infrastructure needs, etc. The workshops will be an opportunity for regional stakeholders to learn about best practices, receive training and technical assistance from experts in the field, work collaboratively on the issues, and make recommendations for multi-benefit, integrated strategies to be included in the IRWM Plan. This task includes resources for workshop preparation, workshop expenses, professional facilitation, expert presenters, and follow-up. Stipends will be provided to cover travel costs for representatives from DACs and other low-income stakeholders who would not otherwise be able to attend.

Task 3: Work with DACs to establish watershed committees

The IRWM Project Manager will encourage DACs and Tribes to form watershed committees and will provide assistance in the establishment of such committees. The Planning Committee members will also provide resources to build the capacity of these committees, and will seek additional resources, including grants, which would promote and strengthen such committees. The goal of this task is to create sustainable representatives of DACs to have a voice and to participate in resources management planning processes, including the IRWMP planning process and other plans and projects throughout the region. At least 5 DACs/Tribes will be provided with advice and assistance regarding the establishment of these committees. At least 2 new committees will be begin implementation during the period of the grant.

Task 4: Perform an Assessment for a Multi-agency Cumulative Effects Database and Develop the Initial Design/Scope of Work for Implementation.

This task involves assessing stakeholder needs for an on-line data management tool to capture and analyze current conditions and cumulative project impacts on a major watershed basis within the region. The implementation of such a data management and analysis tool will be a complex task and will require both resources and time that exceed the IRWM Planning process. However within the IRWMP process consultants will

- analyze current models for relevance to local needs, including the Forest Service's Cumulative Watershed Effects tool and the Southern Sierra Conservation Collaborative's Climate Change Information Clearinghouse and the UC Merced Sierra Research Institute's Southern Sierra Critical Zone Observatory data library,
- develop and implement a user assessment to determine the most critical utilities and characteristics of such a system, and
- develop a scope of work for the design and implementation of this tool. This scope of work and design will be presented to the Planning Committee and other key stakeholders for review and approval.

The outcome will be a project design and scope which has been vetted with key stakeholders and is ready for funding applications. This will be a valuable tool in the implementation of the IRWMP in that it will promote the integration of management efforts across issue areas and among the multiple management entities within the region.

Task 5: Hydrological Capacity Study and Groundwater Management Plan for Region

The Planning Committee consulted with hydrogeological consultant Kenneth Schmidt about performing groundwater studies in the region to determine hydrological capacity. His proposed scope of work for a hydrogeologic evaluation includes the following tasks:

- Assembling and supplementing geologic data
- Studying sample wells to determine well depths and air test yields, determining annual pumpage from water system wells and estimating total well pumpage for the study area
- Water level measurements in representative wells
- Delineating/mapping watersheds and determining water budget
- Developing understanding of hydraulic connections between streamflow and groundwater
- Delineating water quality problem areas

The total estimated cost for one study area was $126,000.

This task also includes a modest amount of money ($12,000) for the Forest Service to provide a synthesis of their research and monitoring data on headwater mountain streams, water budgets for mountain areas, and predictive capability with the groundwater hydrogeological evaluation. Forest Service staff and their university collaborators are collecting data and developing water budgets for headwater streams in the southern Sierra Nevada. This water budget allocates the incoming precipitation into output components: stream flow, shallow and deep groundwater, and vegetation evapotranspiration. The Forest Service also has developed rating curves for small headwater streams in this region. Such relationships allow prediction of stream flow based on precipitation amount for ungaged streams. This information will help build a comprehensive understanding of the region's hydrological capacity.

The Planning Committee also consulted with a local groundwater consultant regarding the development of a groundwater management plan for portions of the IRWM area. Groundwater

management authority is available to only certain entities in the State, and therefore it appears that some investigation as to how this authority can be developed with local stakeholders is necessary. It could also be determined that a state qualified groundwater management plan is not appropriate and that a plan with many of the same features more closely suited to the Plan Area needs should be developed. The Project Manager would focus on investigating the required plan content and would organize the needed cooperative effort amongst stakeholders to create the appropriate entity to cover this area (if deemed appropriate). Assuming a State authorized/approved groundwater management plan or something functionally equivalent is appropriate, the proposed scope of work for the consultant to develop a plan is as follows:

- Project Meetings and Public Noticing:
  i. Prepare a notice of hearing on the adoption of the resolution of intent to draft a groundwater management plan; then prepare a public statement that describes the manner in which interested parties may participate in the development of the GWMP as required by Senate Bill 1938. (These notices would be reviewed by legal counsel and staff, and then be finalized for publication and distribution).
  ii. Prepare a draft "Resolution of Intent to Draft a Groundwater Management Plan."
  iii. Prepare for and participate in a hearing to be conducted by the newly formed Plan Holders Board of Directors on the adoption of the "Resolution of Intent to Draft a Groundwater Management Plan".
  iv. Provide technical assistance to plan holders in the development of a Technical Advisory Committee (TAC). The TAC would provide input during the GWMP preparation and is typically formed of staff, one or two representatives from the Board of Directors and a few landowners.
  v. Attend and assist staff with preparation of materials for TAC Meetings.
  vi. Preparation for and participation in a hearing to be conducted by the Board of Directors on the adoption of the Groundwater Management Plan.
  vii. Publishing of all notices in local newspapers.

- Develop a new Groundwater Management Plan:
  i. Participate in project meetings with the TAC and staff.
  ii. Prepare a Draft Groundwater Management Plan that addresses required elements of Senate Bill 1938; addresses all twelve elements allowed in AB-3030 plans; addresses the Department of Water Resources' draft recommended components of a Groundwater Management Plan (to the extent that they are consistent with the plan holders' objectives); and includes a "plan to involve other agencies" that enables the plan holders to "work cooperatively with other public entities whose service area or boundary overlies the groundwater basin", as required by Senate Bill 1938.
  iii. Publish a "public Draft" of the GWMP.
  iv. Prepare a final Draft of the GWMP.

The total estimated cost for the development of the groundwater management plan by a consultant was $70,000. The effort for the Project Manager to investigate and develop the plan requirements and planning entity including stakeholder involvement is estimated at $9,000.

Task 6: Climate Change Update Analysis

National Center for Conservation Science and Policy (NCCSP) has already completed a good analysis of climate change impacts for this region on a basin-level, including proposed adaptation and mitigation strategies (Koopman et al. 2010). The proposed SSIRWMP budget includes funding for an update of this work with a more specific target toward the foothill and mountain areas. Specifically, the NCCSP has proposed to develop climate change projections for the South Sierra region. The variables that will be assessed include **precipitation, maximum and minimum temperature, average temperature, potential evapotranspiration, excess water, actual evapotranspiration, snowfall, snowpack, snowmelt, recharge, runoff, soil water storage, and climatic water deficit**. These variables will be presented in a series of maps and graphs that demonstrate important seasonal, annual, and decadal changes. NCCSP will present output from the following global climate models, downscaled to 270m, to project conditions through 2100: **GFDL and PCM** using the A2 business-as-usual emissions scenario. Hydrological variables will be estimated using the hydrology model developed by researchers at the USGS (Flint and Flint 2007[6]). The data output will be presented in the form of a report similar to that created for the Fresno, Tulare, Kings, and Madera counties climate change adaptation effort (Koopman et al. 2010[7]), but specific to the South Sierra region.

In addition to climate change projections, NCCSP will conduct a literature review and pull in relevant projections from other studies, such as the CEC report that describes projected for changes in wildfire throughout the century (Westerling et al. 2009[8]). The results from this review will also be included in the report. NCCSP staff will deliver the climate change projections and scientific review in person to the Planning Committee with a scheduled meeting to discuss the results and make sure that the projections, uncertainty, and appropriate ways to use the information in a planning scenario are understood.

NCCSP staff will review an initial draft of the Southern Sierra Integrated Regional Water Management Plan and provide input on (1) the accuracy and comprehensiveness of written information on climate change, (2) the suitability of proposed management strategies given likely future climate conditions, and (3) climate change adaptation strategies for the region. NCCSP staff

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[6] Flint, A. L., and E. L. Flint, 2007, Application of the basin characterization model to estimate in-place recharge and runoff potential in the Basin and Range carbonate-rock aquifer system, White Pine County, Nevada, and adjacent areas in Nevada and Utah: U.S. Geological Survey Scientific Investigations Report 2007-5099, 20 p.

Flint, L. E., and A. L. Flint, 2007, Regional analysis of ground-water recharge, in Stonestrom, D.A., Constantz, J., Ferré, T.P.A., and Leake, S.A., eds., Ground-water recharge in the arid and semiarid southwestern United States: U.S. Geological Survey Professional Paper 1703, p. 29-59.

[7] Koopman, M. E., R. S. Nauman, and J. L. Leonard. 2010. Future Climate Conditions in Fresno County and Surrounding Counties. National Center for Conservation Science and Policy.

[8] Westerling, A. L., B. P. Bryant, H. K. Preisler, T. P. Holmes, H. G. Hidalgo, T. Das, and S. R. Shrestha. 2009. Climate Change, Growth, and California Wildfire. California Climate Change Center. CEC-500-2009-046-F.

will also participate in one of the public workshops that will be used to gather input on appropriate adaptation strategies for the region. The total cost for this proposed work is $45,000.

Task 7: Draft IRWM Plan

The consulting firm Provost and Pritchard has volunteered their time to create a budget for the tasks involved with drafting the IRWMP Plan in accordance with the various tasks included in this proposal. Provost and Pritchard has not been selected as the planning consultant, but their detailed budget (included as Sheet 2 of Attachment 4 – Budget), provides an accurate assessment of the consultant firm staff time required to complete this effort, broken down by Work Plan Task.

The planning firm will have the following responsibilities related to the Work Plan Tasks:

- Collaborative process and public input - the planning firm will attend coordination and public input meetings to provide information about the process and drafts and to receive feedback.
- Workshops – the planning firm will attend workshops to provide background information about the region and to obtain input about integrated strategies to include in the plan.
- Stakeholder outreach – the planning firm will attend additional meetings of stakeholders, including DACs, to provide information about and obtain input for the Plan.
- Draft IRWM Plan – the planning firm will collect and summarize existing information about the region and the IRWM efforts to date and will draft the individual chapters as set forth in the draft Table of Contents (or as later modified by the Planning Committee). Draft recommendations responding to current conditions will be proposed for each substantive chapter for response by the Coordinating Planning Committees. A chapter will also be drafted which will fulfill the requirements for a basic regional Groundwater Management Plan. It is expected that each chapter will undergo 2-3 revisions before finalizing the document.
- Finalize Plan – The planning firm will create a draft final document which will receive final edits by the Planning Committee prior to the adoption process. The planning firm will be available for Board presentations regarding the adoption of the IRWMP as necessary. The planning firm will provide an electronic copy of the final Plan in the formats requested by the Planning Committee and will also provide 250 paper copies of the Plan.

D. Environmental Compliance – The proposed activities are statutorily exempt from California Environmental Quality Act (CEQA) obligations under section 15262 since they consist of the implementation of a planning study which will not have a legally binding effect on later activities. Individual on-the-ground projects will of course receive analysis and documentation under NEPA and/or CEQA as appropriate.

E. IRWM Program Preferences – The proposed Planning process will address the following program preferences:

1. The Plan will promote regional projects and programs – This will be accomplished in many ways but particularly through the workshops bring together stakeholders and water managers throughout the region to explore collaborative programs and consistent policies in key issue areas.

2. The Plan will effectively integrate water management programs and projects within the South Sierra region, a DWR-recognized sub-region of the Tulare Lake Hydrologic region identified in the California Water Plan. This will be accomplished through the collaborative activities and data-sharing opportunities represented by the Coordinating Committee, the Planning Committee, and the targeted workshops.
3. The Plan will effectively resolve significant water-related conflicts within or between regions. For example, the hydrological capacity study will help resolve the future water availability for upstream and downstream uses. One area where this will be specifically useful is in the Tule Indian Reservation's water use conflicts with downstream users.
4. The Plan will contribute to attainment of one or more of the objectives of the CALFED Bay-Delta Program. The South Sierra region includes the mainstem San Joaquin River watershed and will contribute to three of the four objectives stated in the CALFED Record of Decision for this part of the region, and the region as a whole:
    i. "Provide good water quality for all beneficial uses."

       As the upper watershed, the Plan will address water quality issues such as septic systems, local treatment facilities, and heavily used recreation areas. In addition, it will address forest and range fire impact mitigation measures.

    ii. "Improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species."

       Similar to the above, the Plan will address the upper watershed and help maintain and/or restore the ecosystem services provided to downstream areas such as the Delta. This includes water quality, including water temperature.

    iii. "Reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system."

       The South Sierra region is the source of water not only for part of the Bay-Delta system, but also for areas of Tulare, Kings, and Kern County that rely on water exported from the Delta. The Plan will help to increase the reliability of downstream water supply by increasing the functioning of the upper watershed and restoring in capacity to for short term storage (decreasing flood peaks and increasing later season flows).

5. The Plan will address critical water supply or water quality needs of disadvantaged communities within the region. The South Sierra region encompasses many disadvantaged communities and the proposed Plan will address their needs, especially as related to out-of-date and/or poorly performing water supply infrastructure. It will also address water treatment facilities and upstream issues with water quality. Examples include Springville PUD, communities at the mouth of Kings Canyon and others.
6. The Plan will effectively integrate water management with land use planning. Again, the information on hydrological capacity will allow land management policy recommendations based on development capacity as it relates to availability of water resources.

7. The Plan will promote flood control projects that provide multiple benefits, including, but not limited to, water quality improvements, ecosystem benefits, reduction of instream erosion and sedimentation, and groundwater recharge. These projects will be developed as part of the planning process, particularly in regional workshops addressing integrated strategies for flood control.
8. The Plan will address the statewide priority of Drought Preparedness: The Plan will specifically address meadow restoration projects and other fuel reduction projects which can contribute to sustainable water supply during climate-change related water shortages. In addition, through recommendations regarding fuel management to reduce the incidence of catastrophic wildfires in the region, the proposal will help promote the more effective water percolation improving the groundwater storage which can help ease drought conditions.
9. The Plan will address the statewide priority to Use and Reuse Water More Efficiently by making recommendations on landscaping policies. It is estimated that 50-60% of water use in subdivision goes to landscaping. Water use efficiency and water conservation in these areas can help meet future water demands, increase water supply reliability and adapt to climate change.
10. The Plan will address the statewide priority of addressing water management actions that will address the key climate change issues of adaptation to climate change, including more efficient use and reuse of water supplies. In addition the promotion of meadow restoration projects will reduce energy consumption of water systems to store and treat water.
11. The Plan will address the statewide priority of Expanding Environmental Stewardship through comprehensive regional policies to improve watershed floodplain, and instream functions and to sustain water and flood management ecosystems. One example is meadow restoration, which provides storage and release of cold water to downstream water bodies that require cold water for fisheries.
12. The Plan will address the statewide priority of Promoting Integrated Flood Management to provide multiple benefits. This issue will be addressed in workshops with the goal of developing comprehensive regional policies to improve watershed floodplains and to sustain water and flood management ecosystems.
13. The Plan will address the statewide priority of Protecting Surface Water and Groundwater Quality by addressing potential threats to water quality and developing safeguards and protective mechanisms. One specific area that will be addressed is the contamination of surface water through recreational activities and its impacts on downstream users.
14. The Plan will address the statewide priority of Improving Tribal Water and Natural Resources by ensuring inclusion, consultation, collaboration, and access to funding of regional tribal entities.
15. The Plan will address the statewide priority of Ensuring Equitable Distribution of Benefits by increasing the participation of small and disadvantaged communities in the IRWM process and addressing critical water supply and/or water quality needs of California Native American Tribes within the region.

SSIRWMP

Draft Table of Contents

9/8/10

NOTE: This proposed SSIRWMP outline will provide an opportunity to organize our existing information and concerns. It will also allow us to prioritize the funding we receive - not all sections of the Plan need to be developed at the same time.

The outline was developed by combining our existing list of goals/objectives and projects with the new Prop 84 requirements. All stakeholders are encouraged to add sections that reflect their concerns and/or to add notes about specific projects or issues that should be addressed within existing sections.

Section	Existing plans/data	Notes
I. Introduction		
I.A. Context I.A.1 Purpose of IRWMP I.A.2 Background of South Sierra regional effort	 Prop 84, IRWMP act, CA water code RAP Application, meeting notes and SNC application	
I.B Initial Planning Process I.B.1 Stakeholders -I.B.1.a List of Stakeholders -I.B.1.b How Stakeholders were identified and invited to participate -I.B.1.c Facilitating Stakeholder involvement -I.B.1.d Demonstration that all necessary agencies/entities were involved in planning process	 RAP application SNC Application/RAP application Meeting notes, RAP application.	

I.B.2. Initial Planning Committee I.B.4 Initial Coordinating Committee	Meeting notes and RAP	
I.C. Relationship with local Planning entities I.C.1 How IRWM Plan relates to planning documents and programs established by local agencies I.C.2 Description of the dynamics between the IRWM plan and local planning documents I.C.3 Relationship between IRWM entities and local planning entities (current and proposed)	USFS/NPS plan: incorporates BMPs, studies. General plans: ID info gaps, provides info, studies Overlap in county, federal, state planning entities. IRWM reaches out to stakeholders to involve citizens in resource management decisions	
II. SSIRWMP Planning Process		
II.A. Selection of Region II.A.1 Brief description of region II.A.2 Rationale behind selection of regional boundaries - why this is an appropriate area for integrated regional water management II.A.3 Process of refining regional boundaries II.A.4 Neighboring IRWM efforts, overlap and coordination	Maps: regional map, watershed maps RAP application RAP RAP	Rationale: Water supplier vs. water user. Process: Start with SNEP boundaries, modify based on needs/concerns of adjacent regions, existing projects, etc. negotiate specific area boundaries.
II.B. Planning Oversight and Implementation II.B.1 Regional Water Management Group II.B.2 Regional IRWM Planning Committee II.B.3 MOU -II.B.3.a How developed -II.B.3.b What it covers II.B.4 JPA with Funding Area	RAP RAP RAP	
II.C. Vision, Goals and Objectives	Meeting notes	

(for developing plan)		
III. Existing Plans and Studies, Data Gaps Analysis		
<u>III.A Existing Plans – List</u> III.A.1County General Plans III.A.2 Groundwater Management Plans III.A.3 Public Land Management Plans III.A.4 District/Tribal Plans III.A.5 Studies III.A.6 State Water Plans	Spreadsheet of plans and studies, annotated bibliography	
<u>III.B Data Areas (brief descriptions)</u> III.B.1 Hydrology -III.B.1.a Groundwater/surfacewater configuration -III.B.1.b Groundwater/surfacewater quantity III.B.2 Topography III.B.3 Soils III.B.4 Climate -III.B.4.a Rainfall -III.B.4.b Climate Change III.B.5 Habitat -III.B.5.a Areas of special biological significance/key corridors	Maps: watershed maps from SNC Map: groundwater recharge map Local and regional plans such as TBWP corridor study in Fresno and Tulare coountnies Tulare County Weed Management Areas	

-III.B.5.b Invasive species -III.B.5.c Wetlands III.B.6. Fish and Wildlife III.B.7 Land Use and Cover -III.B.7.a Developed Land Use -III.B.7.b Vegetation Cover -III.B.7.c Public Land Ownership and Use III.B.8. Water Quality -III.B.8.a Groundwater -III.B.8.b Surface Water III.B.9. Water Demand and Supply III.B.10 Flood Hazards and Protection III.B.11 Fire Hazards and Protection III.B.12 Infrastructure -III.B.12.a Water Supply -III.B.12.b Wastewater -III.B.12.c Disadvantaged Communities III.B.13 Recreation III.B.14 Energy and Power Generation III.B.15 Socio/Economic Information III.B.16 Air Quality		
<u>III.C. Data Gaps Analysis</u> III.C.1 Data analysis (refer Bobby's chart of existing plan data, included in appendix)		

III.C.2 Data Gaps – List by subject -III.C.2.a -III.C.2.b -III.C.2.c -III.C.2.d -III.C.2.e III.C.3 Prioritizing Data Gaps to be filled through IRWMP plan III.C.3.a Process of prioritization III.C.3.b Priorities		
III.D Technical Analysis – Discussion of data, technical methods and analyses used to develop IRWM plan		
IV. Regional Conditions/Description		
IV.A Watersheds and Water Systems IV.A.1 Watersheds IV.A.2 Water Suppliers IV.A.3 Hydrology		
IV.B Topography		
IV.C. Soils		
IV.D. Climate IV.D.1 Rainfall IV.D.2 Snowpack IV.D.3 Climate Change		
IV.E Vegetation		

IV.E.1 Vegetation type IV.E.2 Vegetation Cover		
IV.F Land Use and Development IV.F.1 Developed Land Use IV.F.2 Future Growth and Development IV.F.3 Public Land Ownership and Use		
IV.G Socio/Economic/Cultural Information IV.G.1 Population Distribution IV.G.2 Demographics IV.G.3 Employment IV.G.4 Disadvantaged Communities IV.G.5 Important Cultural/Social Values IV.G.6 Economic conditions and trends		
IV.H Internal Boundaries IV.H.1Counties/Municipalities/Tribes IV.H.2 Service areas of water/wastewater agencies/districts IV.H.3 Groundwater basin boundaries IV.H.4 Public lands		
V Water Quality		
V.A. Groundwater V.A.1. Naturally occurring contaminants V.A.2. Contamination from human activities		
V.B Surface Water V.B.1. Contamination from human use		

-V.B.1.a Septic systems -V.B.1.b Sewer Treatment Plants V.B.2. Contamination from Agriculture -V.B.2.a Run-off from cattle pastures -V.B.2.b Run-off from crops, orchard, etc -V.B.2.c Persistent organics -V.B.2.d Riparian protection from livestock V.B.3. Sedimentation -V.B.3.a From Roads -V.B.3.b From Development -V.B.3.c From Fires -V.B.3.a Sediment build-up in storage facilities V.B.4 Impaired water bodies		
<u>V.C. Drinking Water</u> V.C.1 Water Quality and Treatment -V.C.1.a Naturally occurring contaminants -V.C.1.b Human caused contaminants --V.C.1.b.i Bacteria --V.C.1.b.ii Caffeine --V.C.1.b.iii Insecticides/pesticides --V.C.1.b.iv Air deposition (acid rain, organics)		
<u>V.D. Issues and Recommendations</u> V.D.1 Issues and strategies V.D.2 Recommendations – Studies V.D.3. Recommendations – Projects V.D.4. Recommendations – Monitoring		-BMPs related to agriculture, silviculture, human use -Establish sewers where failing septic systems are causing impacts

VI Water Supply and Demand		
<u>VI.B Water Supply</u> VI.B.1 Surface Water VI.B.2 Groundwater VI.B.3 Reclaimed/recycled water -VI.B.3.a opportunities for use -VI.B.3.b grey water policies VI.B.4 Agricultural Water Use Efficiency -VI.B.4.a agricultural water accounting and environmental water banks -VI.B.4.b agricultural land retirement VI.B.5 Urban Water Use Efficiency -VI.B.5.a rain gardens/barrels, bioretention -VI.B.5.b drought tolerant landscaping VI.B.6 Imported water (N/A?) VI.B.7 Desalted Water (N/A)		-Assessment of groundwater resources in key areas (Shaver Lake, Montgomery Ranch, Yokohl Valley, Springville) -Assessment of regional groundwater resources (fractured rock capacity). -Protection of Karsts and springs, tubes/caves
<u>VI.C Water Demand</u> VI.C.1 Residential VI.C.1 Agricultural VI.C.3 Industrial VI.C.4 Environmental VI.C.5 Out of region		
<u>VI.D Water Storage</u> VI.D.1 Groundwater recharge -VI.D.1.a minimizing impervious surface cover -VI.D.1.b groundwater recharge facilities		

-VI.D.1.c protecting natural recharge VI.D.2 Groundwater Storage - Conjunctive Use VI.D.3 Surface Water Storage -VI.D.3.a existing storage facilities -VI.D.3.b proposed new facilities - list -VI.D.3.c benefits and costs VI.D.4 Community Water Storage -VI.D.4.a public education, care of wells, septic systems -VI.D.4.b ditch company withdrawal of water from streams and storage in ponds		(include Poso Creek, Tule Tribe, Lewis Creek, Temperance Flat)
<u>VI.E Groundwater Management Plan</u> VI.E.1 Purpose, goals and map VI.E.2 Strategy for updating and implementing VI.E.3 Public process and cooperation VI.E.4 Groundwater goals, objectives and targets VI.E.5 Discussion of groundwater issues VI.E.6 Monitoring Protocols		These are the requirements of GWMPs for purposes of the LGA grants. Some of this information will be in other chapters
<u>VI.F Relationship between Resource and Use</u> VI.F.1 Comprehensive land use planning VI.F.2 Minimum well production requirements for development		
<u>VI.G Issues and Recommendations</u> VI.G.1 Issues and strategies VI.G.2 Recommendations – Studies VI.G.3 Recommendations – Projects VI.F.G Recommendations – Monitoring		Note – Make sure to include strategies listed in Prop 84:
VII Infrastructure		

VII Infrastructure VII.A Water Supply VII.B Wastewater VII.C Disadvantaged Communities VII.C. Operations and Maintenance VII.E Issues and Recommendations VII.E.1 Issues and strategies VII.E.2 Recommendations – Studies VII.E.3 Recommendations – Projects VII.E.4 Recommendations – Monitoring		-Look at infrastructure in terms of efficiency (line canals, fix leaky pipes). -Make sure communities (particularly disadvantaged communities) are served (Tule River Tribe, Bod Fish, Weldon, Kernville). -Look at assistance with operation and maintenance of infrastructure.
VIII Air Quality		
VIII.A Air Quality Zones VIII.B Contaminants and sources VIII.C GHG emissions VIII.C Issues and Recommendations VIII.C.1 Issues and strategies VIII.C.2 Recommendations – Studies VIII.C.3 Recommendations – Projects VIII.C.4 Recommendations – Monitoring		Note – Make sure to include strategies listed in Prop 84:
IX Habitat/Fish and Wildlife		
IX.A Fish and Wildlife IX.A.1 Significant aquatic biological features IX.A.2 Significant terrestrial biological features IX A.3. Threatened/Endangered Species -IX A.3.a List of species of concern		

-IX A.3.b Priority species for management		
IX B Invasive Species IX.B.1Terrestrial plants -IX.B.1.a List of invasive species -IX.B.1.b Priorities for management IX.B.2 Aquatic plants -IX.B.2.a List of invasive species -IX.B.2.b Priorities for management IX.B.3 Terrestrial insects/animals -IX.B.3.a List of invasive species -IX.B.3.b Priorities for management IX.B.4 Aquatic insects/animals -IX.B.4.a List of invasive species -IX.B.4.b Priorities for management		
IX.C Areas of special biological significance IX.C.1 Riparian habitat -IX.C.1.a list of sites – areas of concern -IX.C.1.b priorities for management IX.C.2 Native grasslands -IX.C.2.a list of sites – areas of concern -IX.C.2.b priorities for management IX.C.3 Meadows -IX.C.3.a list of sites – areas of concern -IX.C.3.b priorities for management IX.C.4 Oak Woodlands -IX.C.4.a list of sites – areas of concern		-Sycamore Alluvial woodland -Fencing cattle from streams and rivers Tule River Indian Reservation Canyon live oak woodlands

-IX.C.4.b priorities for management IX.C.5 Wetlands -IX.C.5.a list of sites – areas of concern -IX.C.5.b priorities for management IX.C.6 Vernal Pools -IX.C.6.a list of sites – areas of concern -IX.C.6.b priorities for management IX.C.7 Key wildlife/plant/insect corridors -IX.C.7.a list of sites – areas of concern -IX.C.7.b priorities for management IX.C.8 Healthy rivers -IX.C.8.a list of sites – areas of concern -IX.C.8.b priorities for management IX.C.9 Forests -IX.C.9.a list of sites – areas of concern -IX.C.9.b priorities for management		Alluvial, delta-like floodplain areas Kelso creek flood corridor Upper Deer Creek Watershed, Condor Preserve in Blue Ridge, Sequoia Kings National Park, Continuous Blue Oak woodland corridor Golden trout wilderness, Little Kern Golden Trout, Kern River Preserve Flow augmentation, gravel augmentation, passage and floodplain connectivity. Giant Sequoia groves
<u>IX.D. Conservation Opportunities</u> IX.D.1 List/map of existing easements/mitigation banks IX.D.2 Opportunities for additional easements/ mitigation banks IX.D.3 Agricultural land stewardship IX.C.7 Preservation of strategic farmland		
<u>IX.E Issues and Recommendations</u> IX.E.1 Issues and strategies IX.E.2 Recommendations – Studies IX.E.3 Recommendations – Projects		

IX.E.4 Recommendations – Monitoring		
X Flood Hazards and Protection		
X.A Stormwater Flood Hazards X.A.1 Stormwater Management X.A.2 Land use policies – building in flood plains X.A.3 Floodplain preservation and development -X.A.3.a list of key floodplains -X.A.3.b opportunities for development		Divert runoff from Kings River into SJ River Minimize run-off from developed areas Kings, Kaweah, Tule
X.B Flood Protection Facilities		Check dams, raise levees
X.C Erosion and Landslide Hazards		
X.D Issues and Recommendations X.D.1 Issues X.D.2 Recommendations – Studies X.D.3 Recommendations – Projects X.D.4 Recommendations – Monitoring		Note – Make sure to include strategies listed in Prop 84:
XI Fire Hazards and Protection		
XI.A Wildfire Risk Classifications		
XI.B Fire History		
XI.C Fuel Management		
XI.D Responsibility and Mutual Aid		
XI.E Land Use Policies		
X.F Issues and Recommendations X.F.1 Issues and strategies		Note – Make sure to include strategies listed in Prop 84:

X.F.2 Recommendations – Studies X.F.3 Recommendations – Projects X.F.4 Recommendations – Monitoring		
XI Recreation and Cultural Resources		
XI.A Recreational Facilities XI.A.1 Water dependent recreation XI.A.2 Impact of recreation on water quality XI.A.3 Educating recreational users		Include upper and lower Kern, Tule River, Middle San Joaquin, Shaver, foothill and mountain waterways Vacationers from cities, boaters, anglers, OHV
XI.B. Cultural Resources		Antiquities
XI.C Issues and Recommendations XI.C.1 Issues and strategies XI.C.2 Recommendations – Studies XI.C.3 Recommendations – Projects XI.C.4 Recommendations – Monitoring		
X II Energy and Power Generation		
XII.A. Role of Hydroelectric Generation to water resources		
XII.B Energy efficiency and alternative energy sources		
XIII Climate Change		
XIII.A Major impacts anticipated XIII.A.1 Rainfall XIII.A.2 Snow Pack XIII.A.3.Vegetation (Forest Health, and Habitat		

and Ecosystems)		
XIII.B Adaptability of water management system to anticipated changes		
XIII.C Climate Change Mitigation Opportunities XIII.C.1 Reduction of GHG Emissions XIII.C.2 Other Mitigation Opportunities		
XIII.D Issues and Recommendations XIII.D.1 Issues and strategies XIII.D.2 Recommendations – Studies XIII.D.3 Recommendations – Projects XIII.D.4 Recommendations – Monitoring		Precipitation enhancement
XIV Water Policy, Resolving Conflicts		
XIV.A Conflicts re Water Rights XIV.A.1 Pre-1914 rights XIV.A.2 Modification of holding contracts XIV.A.3 Tribal water rights		
XIV.B Conflicting demands		Agriculture, development, habitat Upstream vs. downstream
XIV.C Consistency in regional water policies		Water supply for development
XIV.C Water Transfers		
XV Integrated Strategies		
XV.A Understanding Resources XV.A.1 Mapping projects XV.A.2 Watershed Health Assessments		

XV.B Multi-Benefit Strategies XV.B.1 Flood Control/Environmental Restoration XV.B.2 Groundwater recharge/habitat protection XV.B.3		
XV.C Data/Information Integration		
XV.D Regional Planning Integration		
XV.E Stakeholder/Institutional Integration		
XV Plan Management and Governance		
XV.A. IRWM Objectives XV.A.1 Objectives (measurable) XV.A.2 How Objectives were selected		
XV.B Plan Governance XV.B.1 Governance Structure XV.B.2 Decision-making XV.B.3 Equal access and participation XV.B.4 Internal and external communication XV.B.5 Interim and formal changes XV.B.6 Long term implementation of Plan		
XV.C Project/Objective Review and Prioritization - Process		Look at Prop 84 requirements for project review
XV.D Updating/Amending Plan		
XV.E Monitoring Plan Performance XV.E.1 Metrics used to evaluate project/plan		

performance XV.E.2 Obtaining Plan objectives XV.E.3 Stakeholder outreach and involvement XV.E.4 Monitoring systems to gather performance data XV.E.5 Mechanisms to adapt project operations and plan implementation based on performance data collected		
XV.F Data Management XV.F.1 Data Management Process for Region XV.F.2 How data collection systems and management protocols will be shared throughout region XV.F.3 How data management system will support local planning efforts XV.F.4 How data will be shared with State agencies XV.F.5 Public education and outreach		
XVI.G. Plan Finance XVI.G.1. Sources of Funding for on-going development and monitoring of IRWMP XVI.G.2. Sources of funding for implementation projects and programs		
XVI Coordination and Collaboration		
XVI.A. Collaboration Opportunities within Region XVI.A.1 Relationship with region's Planning Entities (current and future) XVI.A.2 Partnerships developed during planning process XVI.A.3 Coordinated monitoring		-Regional coordination for habitat enhancement -Prioritization model that will rank restoration and enhancement projects –Adaptive management framework for monitoring feedback and planning future projects

XVI.A.4 Public education and outreach		
XVI.B. Coordination outside Region XVI.B.1 State/federal agencies important to implementation of plan -XVI.B.1.a List of Agencies and roles -XVI.B.1.b Areas where agencies can assist with communication, cooperation or implementation -XVI.B.1.c State/federal regulatory decisions required for plan or project implementation XVI.B.2 Coordination with neighboring IRWM efforts		
XVII Initial Plan Benchmarks and Milestones		
XVIII.A Projects		
XVIII.B Studies		
XVIII.C Collaboration		
XVIII.D Funding and Resources XVIII.D.1 Potential local funding and grant opportunities XVIII.D.2 Certainty, magnitude and longevity of potential funding – effects on plan implementation XVIII.D.3 Covering Operation and Maintenance costs		
XVIII.E Ongoing Governance		
XIX Potential Impacts and Benefits of Plan Implementation		

XIX.A Potential benefits and impacts from regional plan vs. individual local efforts		
XIX.B Potential benefits/impacts within IRWM plan region		
XIX.C Potential benefits/impacts to other management regions		
XIX.D Potential interregional impacts and benefits		
XIX.E Potential impacts and benefits to non-water resources (air quality, energy, etc.)		